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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,337	02/26/2004	Stephen Todd	E0295.70199US00	3987
23628	7590	06/25/2008	EXAMINER	
WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206			NAJEE-Ullah, TARIQ S	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/787,337	TODD ET AL.	
	Examiner	Art Unit	
	TARIQ S. NAJEE-ULLAH	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 26 February 2004.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-116 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-116 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 26 February 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date <u>4/18/05, 5/5/06, 3/29/07</u> .	6) <input type="checkbox"/> Other: _____ .

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DETAILED ACTION

This is the first Office action in response to Application 10/787,337 filed on 26 February 2004. Claims 1-116 have been examined and are pending.

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 18 April 2005, 05 May 2006, and 29 March 2007 were in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

Drawings

2. The drawings are objected to because the handwritten drawings and writing is unclear. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each

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drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 113 recites the limitation "claim 1112." There is insufficient antecedent basis for this limitation in the claim. Examiner interprets "claim 1112" to reference "claim 112."

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-67, 69-84, 86-104, and 106-116 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 6,173,374 to Heil et al (Heil hereinafter).

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Regarding claims 1, 21, 63, and 80, Heil discloses **receiving a request from a host computer to locate the unit of data previously stored in the storage environment** (Heil, fig. 3, step 400 shows an incoming request); **and in response to receipt of the request, determining on which one of the plurality of storage clusters the unit of data is stored** (Heil, fig. 3 shows a flowchart of how incoming requests are processed. In step 410, it is determined whether the unit of data requested is available on the local data disks or not. If the data requested is not on the local drives, the request is shipped to remote disks in the storage cluster).

Regarding claims 41 and 97, Heil discloses **an input that receives a request from a host computer to locate a unit of data on at least one of a plurality of storage clusters in a storage environment** (Heil, fig. 3, step 400 shows an incoming request), **and at least one controller, coupled to the input, that: receives the request from the input** (Heil, fig. 2 shows the node, i.e. controller that is coupled to the network fibre channel backbone. Fig. 3, step 400 shows an incoming request to the node.); **and in response to receipt of the request, determines on which of the plurality of storage clusters the unit of data is stored** (Heil, fig. 3 shows a flowchart of how incoming requests are processed. In step 410, it is determined whether the unit of data requested is available on

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the local data disks or not. If the data requested is not on the local drives, the request is shipped to remote disks in the storage cluster).

Regarding claims 2, 22, 64, and 81, Heil discloses the invention substantially as described in claims 1, 21, 63, and 80 above including, **wherein the host computer executes an application program that stores data to and retrieves data from the storage environment** (Heil, col. 3, lines 30-48), **wherein the host further executes an application programming interface that interfaces the application program to the storage environment, and wherein the act of receiving is performed by the application programming interface** (Heil, col. 3, lines 30-48).

Regarding claims 3, 23, 65, and 82, Heil discloses the invention substantially as described in claims 1, 21, 63, and 80 above including, **wherein the storage environment is coupled to the host computer by at least one communication link** (Heil, figs. 1-2), **wherein the host computer, the storage environment, and the at least one communication link form a computer system** (Heil, figs. 1-2), **wherein the computer system includes an appliance that monitors access requests from the host computer** (Heil, fig. 3), and **wherein the act of receiving the request further comprises an act of receiving, at the**

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appliance, the request from the application (Heil, fig. 3; col. 3, lines 30-48).

Regarding claims 4 and 24, Heil discloses the invention substantially as described in claims 3 and 23 above including, **wherein the act of determining is performed by the appliance** (Heil, fig. 4A, step 502).

Regarding claims 5, 25, 66, and 83, Heil discloses the invention substantially as described in claims 1, 21, 63, and 80 above including, **wherein the host computer executes an application program that stores data on the storage environment** (Heil, fig. 3; col. 3, lines 30-48), **and wherein the act of receiving the request further comprises an act of receiving the request directly from the application program** (Heil, fig. 3; col. 3, lines 30-48).

Regarding claims 6, 26, 67, and 84, Heil discloses the invention substantially as described in claims 4, 23, 66, and 83 above including, **wherein the act of receiving the request further comprises an act of receiving the request at at least one of the plurality of storage clusters** (Heil, figs. 2-3).

Regarding claims 7, 27, and 49, Heil discloses the invention substantially as described in claims 6, 26, and 48 above including, **wherein the at least one of the plurality of storage clusters includes at least one access node that receives and processes access requests** (Heil,

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figs. 1-2), and wherein the act of receiving the request from the application program at the at least one of the plurality of storage clusters further comprises an act of receiving the request at the at least one access node (Heil, fig. 2 shows where the requests are received at the node, figs. 3-4C describe the steps of receiving a request.).

Regarding claims 8, 28, and 50, Heil discloses the invention substantially as described in claims 1, 21, and 41 above including, **wherein the act of determining comprises an act of performing a search for the unit of data on the plurality of storage clusters** (Heil; figs. 4A-4D; col. 4, lines 7-20).

Regarding claims 9, 29, and 51, Heil discloses the invention substantially as described in claims 8, 28, and 50 above including, **wherein the act of performing a search for the unit of data further comprises an act of performing the search serially through the plurality of storage clusters until the unit of data is found** (Heil; figs. 4A-4D; col. 4, lines 7-20).

Regarding claims 10, 30, and 52, Heil discloses the invention substantially as described in claims 8, 28, and 50 above including, **wherein the act of performing a search for the unit of data further comprises an act of performing the search** (Heil; figs. 4A-4D; col. 4, lines 7-20)**on**

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each of the plurality of storage clusters in parallel (Heil; col. 1, lines 44-45; col. 2, lines 16-22).

Regarding claims 11, 31, and 53, Heil discloses the invention substantially as described in claims 1, 21, and 41 above including, **wherein the act of determining is performed by at least one of the plurality of storage clusters** (Heil, fig. 3, fig. 4A, step 502).

Regarding claims 12, 32, and 54, Heil discloses the invention substantially as described in claims 1, 21, and 41 above including, **wherein the act of determining comprises locating the unit of data on at least one of the plurality of storage clusters without performing a search** (Heil; col. 4, lines 54-57, polls may be conducted instead of searches.).

Regarding claims 13, 33, and 55, Heil discloses the invention substantially as described in claims 1, 21, and 41 above including, **wherein the storage environment is a content addressable storage environment in which the unit of data stored in the storage environment is accessible by a content address that is based, at least in part, upon at least a portion of the content of the unit of data** (Heil; col. 8, lines 29-31), **and wherein the act of determining further comprises determining on which of the plurality of storage clusters the unit of data is stored based on the content address of the unit of data** (Heil, col. 8, lines 29-31).

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Regarding claims 14, 34, and 56, Heil discloses the invention substantially as described in claims 13, 33, and 55 above including, **wherein the content address includes time information, based on when the unit of data was stored in the storage environment** (Heil, col. 12, lines 19-59), **and the act of determining** (Heil, fig. 3, figs. 4A-4C) **comprises an act of determining on which of the plurality of storage clusters the unit of data is stored based, at least in part, on the time information of the content address of the unit of data** (Heil, col. 12, lines 19-59).

Regarding claims 15, 35, and 57, Heil discloses the invention substantially as described in claims 14, 34, and 56 above including, **wherein the act of determining further comprises an act of determining on which of the plurality of storage clusters the unit of data is stored based** (Heil, fig. 3, figs. 4A-4C), **at least in part, on a hash value of the time information of the content address of the unit of data** (Heil, col.13, lines 11-13).

Regarding claims 16, 36, 58, 75, 91 and 112, Heil discloses the invention substantially as described in claims 13, 33, 57, 72, 90 and 109 above including, **wherein the content address** (Heil, col. 8, lines 29-31) **includes a guaranteed unique identifier (GUID)** (Heil, col. 8, lines 29-30, unique addresses, i.e. guaranteed unique identifier), **and wherein the**

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act of determining further comprises an act of determining (Heil, fig. 3, figs. 4A-4C) **on which of the plurality of storage clusters the unit of data is stored based, at least in part, on the GUID** (Heil, col. 8, lines 29-30, unique addresses, i.e. guaranteed unique identifier).

Regarding claims 17, 37, 59, 76, 93 and 113, Heil discloses the invention substantially as described in claims 16, 36, 58, 75, 91 and 112 above including, **wherein the act of determining** (Heil, fig. 3, figs. 4A-4C) **further comprises an act of determining on which of the plurality of storage clusters the unit of data is stored based, at least in part, on a hash** (Heil, col.13, lines 11-13) **of the GUID** (Heil, col. 8, lines 29-30, unique addresses, i.e. guaranteed unique identifier).

Regarding claims 18, 38, 60, 77, and 94, Heil discloses the invention substantially as described in claims 13, 33, 55, 72, and 89 above including, **wherein the act of determining** (Heil, fig. 3, figs. 4A-4C) **further comprises acts of: accessing information that specifies an algorithm that was used to select on which of the plurality of storage clusters the unit of data was stored, based on the content address of the unit of data** (Heil, col.13, lines 4-14); **and applying the algorithm to the content address of the unit of data to determine on which of the plurality of storage clusters the unit of data is stored** (Heil, col.13, lines 4-14).

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Regarding claims 19, 39, 61, 78, 95 and 115, Heil discloses the invention substantially as described in claims 18, 38, 60, 77, 94 and 114 above including, **wherein the information specifies a plurality of algorithms used by the storage environment and during which period of time each of the plurality of algorithms was used to store units of data** (Heil, col.13, lines 4-14).

Regarding claims 20, 40, and 62, Heil discloses the invention substantially as described in claims 19, 39, and 61 above including, **wherein the information further specifies, for each one of the plurality of algorithms, at least one storage cluster that was in the storage environment during the period of time when the one of the plurality of algorithms was in effect** (Heil, col.13, lines 4-14).

Regarding claims 42 and 98, Heil discloses the invention substantially as described in claims 41 and 97 above including, **the host computer that accesses data stored in the storage environment** (Heil, figs. 1-2; col. 1, lines 9-14); **and a communication link that couples the host computer to the storage environment to form a computer system** (Heil, figs. 1-2; col. 1, lines 9-14).

Regarding claims 43 and 99, Heil discloses the invention substantially as described in claims 42 and 98 above including, **wherein the at least one controller is disposed in the host computer** (Heil, figs. 1-2).

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Regarding claims 44 and 100, Heil discloses the invention substantially as described in claims 42 and 98 above including, **wherein the at least one controller is disposed in the storage environment** (Heil, figs. 1-2).

Regarding claims 45 and 101, Heil discloses the invention substantially as described in claims 42 and 98 above including, **wherein the at least one controller is disposed in between the storage environment and the host computer in an appliance that monitors access requests from the host computer to the storage environment** (Heil, figs. 1-2).

Regarding claims 46 and 102, Heil discloses the invention substantially as described in claims 41 and 99 above including, **wherein the host computer executes an application program that stores data to and retrieves data from the storage environment** (Heil, figs. 1-3; col. 1, lines 9-14), **wherein the host further executes an application programming interface that interfaces the application program to the storage environment** (Heil, figs. 1-3; col. 1, lines 9-14), **and wherein the at least one controller receives the request at the application programming interface** (Heil, figs. 1-3; col. 1, lines 9-14).

Regarding claims 47 and 103, Heil discloses the invention substantially as described in claims 41 and 97 above including, **wherein the host computer executes an application program that stores data in the storage environment** (Heil, figs. 1-3; col. 1, lines 9-14; col. 3, lines 30-

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48), and wherein the at least one controller receives the request directly from the application program (Heil, figs. 1-3; col. 1, lines 9-14; col. 3, lines 30-48).

Regarding claims 48 and 104, Heil discloses the invention substantially as described in claims 44 and 100 above including, **wherein the apparatus is disposed in at least one of the plurality of storage clusters** (Heil, figs. 1-2).

Regarding claims 69, 87, and 107, Heil discloses the invention substantially as described in claims 63, 80, and 97 above including, **wherein the act of selecting further comprises an act of selecting one of the plurality of storage clusters to store the unit of data based on a load of at least one of the plurality of storage clusters** (Heil, col. 1, lines 24-36).

Regarding claims 70, 86, and 106, Heil discloses the invention substantially as described in claims 63, 80, and 97 above including, **wherein the act of selecting further comprises an act of selecting one of the plurality of storage clusters to store the unit of data based, at least in part, on an available storage capacity of each of the plurality of storage clusters** (Heil, col. 1, lines 24-36).

Regarding claims 71, 88, and 108, Heil discloses the invention substantially as described in claims 63, 80, and 97 above including,

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wherein the act of selecting further comprises an act of selecting one of the plurality of storage clusters to store the unit of data based on a size of the unit of data (Heil, col. 1, lines 24-36).

Regarding claims 72, 89, and 109, Heil discloses the invention substantially as described in claims 63, 80, and 97 above including, **wherein the storage environment is a content addressable storage environment in which the unit of data stored in the storage environment is accessible by a content address that is based, at least in part, upon at least a portion of the content of the unit of data** (Heil; col. 8, lines 29-31), **and wherein the act of selecting further comprises an act of selecting one of the plurality of storage clusters to store the unit of data based on the content address of the unit of data** (Heil, col. 8, lines 29-31).

Regarding claims 73, 90, and 110, Heil discloses the invention substantially as described in claims 72, 89, and 109 above including, **wherein the content address includes time information, based on when the unit of data was stored in the storage environment** (Heil, col. 12, lines 19-59), **and the act of selecting comprises an act of selecting one of the plurality of storage clusters to store the unit of data based, at least in part, on the time information of the content address of the unit of data** (Heil, col.13, lines 11-13).

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Regarding claims 74, 91, and 111, Heil discloses the invention substantially as described in claims 73, 90, and 110 above including, **wherein the act of selecting further comprises an act of selecting one of the plurality of storage clusters to store the unit of data based, at least in part** (Heil, col. 12, lines 19-59), **on a hash value of the time information of the content address of the unit of data** (Heil, col.13, lines 11-13).

Regarding claims 79, 96, and 116, Heil discloses the invention substantially as described in claims 63, 80, and 97 above including, **storing the unit of data on the selected one of the plurality of clusters** (Heil, fig. 3, col. 3, lines 30-48).

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Regarding claim 114, Heil discloses the invention substantially as described in claims 109 above including, **wherein the at least one controller: applies an algorithm to the content address of the unit of data to determine on which of the plurality of storage clusters to store the unit of data** (Heil, col.13, lines 4-14); **and stores the algorithm in a record that indicates a time frame in which the algorithm was in use** (Heil, col.13, lines 4-14).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 68, 85, and 105 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,173,374 to Heil et al (Heil hereinafter) as applied to claims 63, 80, and 97 above, and further in view of US Patent Number 5,428,796 to Iskiyan et al (Iskiyan hereinafter).

Regarding claims 68, 85, and 105, Heil discloses the invention substantially as described in claims 63, 80, and 97 above including **wherein the act of selecting further comprises an act of selecting one of the**

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plurality of storage clusters to store the unit of data (Heil, fig. 3, col. 3, lines 30-48). Iskiyan teaches **using a round-robin technique** (Iskiyan, col. 8, lines 44-47). Heil and Iskiyan are analogous art because they are both from the same field of endeavor of network communications and data storage. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Heils's system with Iskiyan's round-robin technique. The suggestion/motivation would have been to improve data access performance slowdown that arises during periods of high demand for access to data storage in a data storage network. (Iskiyan, col. 2, lines 45-67).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: (US 5,530,897 to Meritt; US 5,627,990 to Cord et al; US 5,778,411 to DeMoss et al; US 2005/0015471 to Zhang et al; US 2005/0027862 to Nguyen et al; US 2006/0004796 to Nakamura).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TARIQ S. NAJEE-ULLAH whose telephone number is (571)270-5013. The examiner can normally be reached on Monday through Friday 8:30 - 6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on (571)

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272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T. N.

/Jeffrey Pwu/
Supervisory Patent Examiner, Art Unit 2146